

What is claimed is:

1. An apparatus for separating and beating a material, comprising:

a conical stationary shell having a first beating section,

5 a ring-shaped stationary disc provided outside the conical stationary shell and having a second beating section,

a conical rotor including a third beating section facing said first beating section to create a gap between the first beating section and the third beating section for the material to  
10 pass therethrough,

a ring-shaped rotor disc provided outside the conical rotor and including a fourth beating section facing said second beating section to create a gap between the second beating section and the fourth beating section for the material to pass therethrough,  
15 and

a rotational shaft attached to the conical rotor for supporting and rotating the same.

2. An apparatus according to claim 1, wherein the second beating  
20 section of the ring-shaped stationary disc and the fourth beating section of the ring-shaped rotor disc are machined discs.

3. An apparatus according to claim 1, wherein the ring-shaped stationary disc is connected to and moved independently relative  
25 to the conical stationary shell parallel to a longitudinal direction of the rotational shaft.

4. An apparatus according to claim 1, wherein the ring-shaped rotor disc is connected to and moved independently relative to

the conical rotor parallel to a longitudinal direction of the rotational shaft.

5. An apparatus according to claim 1, wherein the conical type stationary shell is divided into at least an upstream section and a downstream section with respect to a material flow, and the conical rotor is divided into at least an upstream section and a downstream section with respect to the material flow.

6. An apparatus according to claim 1, wherein said first and third beating sections face each other so that a distance between the first and third beating sections is gradually decreased along a flow direction of the material.

7. An apparatus according to claim 6, wherein said gap between the second and fourth beating sections is narrower than the distance between the first and third beating sections.

8. An apparatus according to claim 1, wherein said apparatus is a refiner for papermaking.

9. An apparatus according to claim 1, wherein said apparatus is an agitating apparatus for papermaking.